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Explorer Program Announcement of Opportunity

University-class Explorer and Missions of Opportunity

Notice of Intent Due:
Proposals Due:

October 1997
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University-class Explorer and Missions of Opportunity
Announcement of Opportunity

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**OFFICE OF SPACE SCIENCE (OSS)
EXPLORER PROGRAM
ANNOUNCEMENT OF OPPORTUNITY
FOR
UNIVERSITY-CLASS EXPLORER AND MISSIONS OF OPPORTUNITY**

FOREWORD

This document is an Explorer program Announcement of Opportunity (AO) for two different types of investigations; University-class Explorers (UNEX) and Missions of Opportunity.

Section 1, “Description of Opportunity,” provides a brief introduction describing the scope of the solicitation, the two types of investigations that may be proposed in response to the Announcement of Opportunity, a summary of the selection process, and the schedule. Section 2, “Explorer Program Goals, Objectives, and Background,” and Section 3, “Explorer Program Constraints, Guidelines, and Requirements,” are applicable to both University-class Explorer investigations and Missions of Opportunity investigations. Section 4 describes University-class Explorer investigations and University-class Explorer-specific requirements. Section 5 describes Missions of Opportunity investigations and Missions of Opportunity-specific requirements. Section 6, “Proposal Preparation and Submission,” Section 7, “Proposal Evaluation, Selection, and Implementation,” and Section 8, “Conclusion,” are applicable to both University-class Explorer investigations and Missions of Opportunity investigations.

Proposers interested only in University-class Explorer investigations should read sections 1, 2, 3, 4, 6, 7, and 8 and any Appendices referred to in those sections.

Proposers interested only in Missions of Opportunity should read sections 1, 2, 3, 5, 6, 7, and 8 and any Appendices referred to in those sections.

A new feature of this Announcement of Opportunity is that the Office of Equal Opportunity Programs is cooperating with the Office of Space Science to encourage Historically Black Colleges and Universities and Other Minority Universities to participate in Explorer program missions. The Office of Equal Opportunity Programs will provide up to \$500K per selected project in capital investment funding (human resources, facilities, equipment, etc.) to further enhance the infrastructure of Historically Black Colleges and Universities and Other Minority Universities participating in a University-class Explorer investigation selected through this Announcement of Opportunity; see especially Section 4.2 below.

1.0 DESCRIPTION OF OPPORTUNITY

1.1 General Provisions

The National Aeronautics and Space Administration (NASA) Office of Space Science announces the opportunity to conduct space science investigations through the Explorer program. For the purposes of this announcement, the term "space science" encompasses the Office of Space Science scientific objectives of the following NASA science themes:

Astronomical Search for Origins and Planetary Systems;
The Sun-Earth Connection;
Solar System Exploration; and
Structure and Evolution of the Universe.

Additional information concerning these themes is provided in Section 2.1 and through appropriate links found on the Office of Space Science homepage at Internet address <<http://www.hq.nasa.gov/office/oss/>>.

Proposals submitted in response to this Announcement of Opportunity must be for complete investigations encompassing all appropriate mission phases. For the purposes of this Announcement of Opportunity, mission phases are defined as follows: Phase A - concept study; Phase B - definition and preliminary design; Phase C - detailed design; Phase D - development through launch and instrument checkout (up to 30 days after launch if applicable); and Phase E - mission operations and data analysis. Phase E is to include analysis and publication of data in the peer reviewed scientific literature and delivery of the data to an appropriate data archive.

This Announcement of Opportunity invites proposals for the first and second University-class Explorer missions and for participation in non-NASA space science missions, identified in this Announcement of Opportunity as Missions of Opportunity. University-class Explorers are complete missions launched on Expendable Launch Vehicles or long duration balloons, or launched as secondary payloads (attached or free flyer) on the Space Shuttle or other spacecraft. Further description of University-class Explorers is in section 4.0. NASA intends to select at least two University-class Explorer missions to launch by December 31, 2000.

Participation in space science Missions of Opportunity may be undertaken through the Explorer program when the perceived value is high and the proposed NASA cost is within the funding limits of the Explorer program. NASA is not required to select a Mission of Opportunity under this solicitation. The Explorer program also expects Missions of Opportunity to meet other program objectives for reducing cost, injecting new technology, and enhancing education and public outreach. Note that if a Mission of Opportunity is selected, a reduced flight rate of future Explorers is expected.

1.2 Proposal Evaluation and Selection Process

Proposals will be assessed against the criteria given in section 7.2 by panels of individuals who are peers of the proposers in the relevant technical and scientific areas. Once the evaluations are complete, the proposals will be categorized in accordance with the NASA FAR Supplement Part 1872.0. The results of the proposal evaluations and categorizations will then be presented to the Space Science Steering Committee which will conduct an independent review of the evaluation and categorization process. After this review, the final evaluation and categorization results, the total proposed cost, and the confidence that the mission can be accomplished within those proposed costs will be presented to the Space Science Board of Directors and the Associate Administrator who will make the final selections. Sections 7.1, 7.2, and 7.3 provide additional details on these activities.

1.3 Proposal Opportunity Period and Schedule

NASA is seeking University-class Explorer investigations with mission launch dates no later than December 31, 2000. Investigations with anticipated launch dates later than these should be proposed in response to a subsequent University-class Explorer Announcement of Opportunity.

NASA is seeking Missions of Opportunity through this Announcement of Opportunity where a commitment from NASA is needed by the sponsoring organization before December 31, 1998. The launch dates may be at any time. Missions of Opportunity requiring later commitment dates should propose in response to a subsequent Explorer program Announcement of Opportunity. The following schedule describes the major milestones for this University-class Explorer and Missions of Opportunity Announcement of Opportunity.

Announcement of Opportunity release.....	September 1997
Notice of intent due.....	October 1997
Proposal submittal due by.....	December 1997
Non-U.S. Letter(s) of Endorsement due.....	January 1998
Selections (target).....	within 90 days of proposal submission
Award (target).....	April 1998

2.0 EXPLORER PROGRAM GOALS, OBJECTIVES, AND BACKGROUND

2.1 Space Science Research Goals

The scientific goals of space science research within the Office of Space Science (OSS) are generally contained in *Space Science for the 21st Century: The Space Science Enterprise Strategic Plan* (August 1995); see Appendix D. The goals in this plan are supported by the following documentation (see also Appendix D):

Sun Earth Connection Subcommittee report, titled *Sun-Earth Connection Roadmap, Strategic Planning for the Years 2000 - 2020* (April 1997).

Structure and Evolution of the Universe Subcommittee report, titled *The Evolving Universe, Structure and Evolution of the Universe Roadmap 2000 - 2020* (April 1997).

Solar System Exploration Subcommittee report, titled *Mission to the Solar System Roadmap 2000 - 2015* (September 1996).

Origins Subcommittee report, titled *Search for Origins Roadmap* (April 1997).

National Research Council report, titled *A Science Strategy for Space Physics* (1995).

Report of the "HST and Beyond Committee," titled *HST and Beyond. Exploration and Search for Origins: A Vision for Ultraviolet - Optical - Infrared Space Astronomy* (May 1996).

Report Synopsis of the Gamma Ray Astronomy Program Working Group, titled *Recommended Priorities for NASA's Gamma-Ray Astronomy Program 1996-2010* (1997).

The Jet Propulsion Laboratory report, titled *Exploration of Neighboring Planetary Systems (ExNPS)* (October 1995).

National Research Council Board on Physics and Astronomy report, titled *Opportunities in Cosmic-Ray Physics and Astrophysics* (1995).

Report of the X-Ray Astronomy Program Working Group, titled *15-Year Plan for X-Ray Astronomy 1994 - 2008* (June 1994).

National Research Council report on Planetary and Lunar Exploration, titled *An Integrated Strategy for the Planetary Sciences. 1995-2010*.

The goals and strategies outlined in these documents encompass a wide range of scientific questions spanning a variety of scientific disciplines that NASA seeks to address by supporting investigations in three broad categories: (1) laboratory research and theoretical analyses; (2) ground-based astronomical observations; and (3) flight projects. This Announcement of Opportunity solicits only those investigations that fall into this third category. The scientific goals in these referenced documents as they relate to the NASA science themes listed in Section 1.1 will form the basis of the science evaluation criteria. Further information on the science themes may be obtained through the World Wide Web URL address <<http://www.hq.nasa.gov/office/oss/>>.

2.2 Explorer Program Objectives

The objective of the Explorer program is to conduct space science research where the observation platform is located at approximately 1 Astronomical Unit of the Sun. This includes the top of the earth's atmosphere, earth orbit, near-earth space, Lagrangian orbits L1 and L2, or interplanetary space. Missions to investigate the moon from Lunar orbit should apply to the next Discovery Announcement of Opportunity.

The Explorer program seeks to conduct scientific investigations of modest programmatic scope. The program intends to provide a continuing opportunity for quickly implemented flights of missions to conduct focused investigations that complement major flight missions, prove new scientific concepts, or make other significant contributions to space science.

The Explorer program is designed to accomplish frequent, high quality space science investigations utilizing innovative, streamlined, and efficient management approaches. It seeks to reduce cost and improve performance by selecting investigations for which investigators will commit to cost limits, control business and technical processes, and apply new technology. Finally, it seeks to enhance public awareness of, and appreciation for, space science and to incorporate educational and public outreach activities as integral parts of space science investigations.

2.3 Program Background

The Explorer program provides several classes of flight opportunities for the science themes described in Section 1.1. Recent changes to the Explorer program have been designed to increase the number of flight opportunities in response to recommendations from the scientific community. These changes include providing new classes of Explorer missions and opening up additional opportunities within each class. Explorer program classes will continue to be characterized by the scope of the mission, based primarily on definition and development cost and secondarily on instrument and spacecraft payload size and mass and launch vehicle capabilities, at the time of this Announcement of Opportunity.

The current Explorer program classes are as follows:

- **University-class Explorers (UNEX)** are investigations characterized by a definition, development, launch service, and mission operations and data analysis costs not to exceed \$13 million (in Fiscal Year 1997 dollars) total cost to NASA. University-class Explorer missions will be launched by a variety of low cost methods. Initially, one launch per year is anticipated. A long term program goal is to achieve multiple launches per year for this class of Explorer missions with a substantially lower total cost.
- **Small Explorers (SMEX)** are investigations characterized by a definition, development, launch service, and mission operations and data analysis costs not to exceed \$69 million (in Fiscal Year 1997 dollars) total cost to

NASA. These investigations can generally be launched within the capabilities of small expendable launch vehicles. It is NASA's intent to launch one Small Explorer mission per year.

- **Medium-class Explorers (MIDEX)** are investigations characterized by a definition, development, launch service, mission operations and data analysis cost not to exceed \$138 million (in Fiscal Year 1997 dollars) total cost to NASA. These investigations can generally be launched within the capabilities of the NASA Med-Lite launch vehicle. NASA intends to launch one MIDEX mission per year.
- **Missions of Opportunity** are investigations characterized by being part of a non-NASA space science mission of any size but having a requested NASA cost that is typically under \$20 million (in Fiscal Year 1997 dollars) total cost to NASA. These missions are conducted on a no-exchange-of-funds basis with the organization sponsoring the mission. NASA intends to solicit proposals for Missions of Opportunity with each future Announcement of Opportunity issued for UNEX, SMEX, and MIDEX investigations. With each Announcement of Opportunity, the cost limit for Missions of Opportunity is expected to be constant.

3.0 EXPLORER PROGRAM CONSTRAINTS, GUIDELINES, AND REQUIREMENTS

This section describes the constraints, guidelines, and requirements applicable to all Explorer program selections. Additional constraints specific to University-class Explorers are in Section 4 and constraints specific to Missions of Opportunity are in Section 5. Specific directions for proposal preparation are included in Section 6.

3.1 General Program Constraints and Guidelines

The major responsibility for implementing a selected investigation rests with the investigation team, which will have a large degree of freedom with which to accomplish its proposed objectives with only essential NASA oversight. Once an investigation has been selected for flight, failure to maintain reasonable progress on an agreed upon schedule or failure to operate within the constraints outlined below may be cause for its termination by NASA. Every aspect of a selected investigation must reflect a commitment to mission success while keeping total costs as low as possible. Consequently, investigations should be designed and planned to emphasize mission success within cost and schedule constraints by incorporating sufficient margins, reserves, and content resiliency. Only those investigations whose proposed cost, schedule, and launch vehicle requirements do not exceed the constraints and guidelines identified herein will be considered as candidates for selection.

3.2 Science Requirements

The relationship between the proposed scientific objectives, the data to be returned, and the instrument payload to be used in carrying out the proposed

investigation must be unambiguous and clearly stated in the proposal. Explorer investigation teams will be responsible for initial analysis of the data, its subsequent delivery to an appropriate data repository, the publication of scientific findings, and communication of results to the public.

In accordance with NASA policy, data are to be released as soon as possible after a brief data validation period appropriate for the mission. Explorer teams will be responsible for collecting the scientific, engineering, and ancillary information necessary to validate and calibrate the scientific data prior to depositing it in the appropriate data repository. The time required to complete this process should be the minimum necessary to provide appropriate data to the scientific community and the general public and must be described in the proposal. As part of their funded Phase E activities, investigation teams must include an appropriate period for data analysis independent of archiving activities.

3.3 Education, Outreach, New Technology, Small Disadvantaged Business Requirements, and Minority Institution Requirements

3.3.1 Education and Outreach

Education and outreach activities directed toward precollege education and the public understanding of science are a required component of Explorer investigations. Such activities should be developed to be consistent with and support the Office of Space Science Education/Public Outreach Strategy contained in *Partners in Education, A Strategy for Integrating Education and Public Outreach into NASA's Space Science Programs*, dated March 1995, and its accompanying implementation plan, *Implementing the Office of Space Science (OSS) Education/Public Outreach Strategy*, dated October 1996 (see the Explorer Program Library described in Section 6.1.1 and Appendix D). Guidance contained in the Education/Outreach Strategy and Implementation Plan will be used as the basis for evaluating proposed activities in this area. In addition, the proposed activity will be evaluated to determine realism of the cost and implementation plan, effectiveness of the proposed activity, and the commitment of the PI to the execution of the planned activity. Proposed activities may also include public information programs that will inform the public by mass media or other means, or utilize other innovative ideas for bringing space science to the public. Proposed Explorer investigations must include the PI's approach for planning an education/outreach program, arranging for appropriate partners and alliances, implementing the education/outreach program including appropriate evaluation activities, and disseminating education/outreach products and materials. Costs for such activities must be included as part of mission planning, development, and operations costs.

The Education/Public Outreach Task Force of the OSS Space Science Advisory Committee has recommended that, as a long term goal, OSS should plan to spend one to two percent of its total budget on education and the public understanding of science. For this Announcement of Opportunity, the one to two percent applies to the value of the grant or cooperative agreement with the

Principal Investigator's team. This and further guidance on education and outreach activities are contained in the implementation plan mentioned above.

3.3.2 Advanced Technology

NASA seeks to infuse new technologies that enhance performance and reduce costs into its programs and to strengthen the mechanisms by which it transfers such technologies to the private sector, including the nonaerospace sector. The means by which NASA's Office of Space Science plans to implement new technology is described in the *Office of Space Science Integrated Technology Strategy*, which is included in the Explorer Program Library described in Section 6.1.1. Explorer investigations present an opportunity to develop and test new technologies and applications. Investigations dependent on new technology will not be penalized for risk provided that adequate plans are described to provide a reasonable back-up approach that will assure the success of the investigation.

3.3.3 Small Disadvantaged Businesses and Minority Institutions

The proposing institution(s) shall agree to use their best efforts to assist NASA in achieving its goal for the participation of small disadvantaged businesses, women-owned small businesses, Historically Black Colleges and Universities (HBCU's), and Other Minority Universities (OMU's) in NASA procurements. Investment in these organizations reflects NASA's commitment to increase the participation of minority concerns in the aerospace community and is viewed as an investment in our Nation's future. For University-class Explorers, an additional opportunity has been established for HBCU's and OMU's participation. See Section 4.2 for details.

3.4 Technical Approach Requirements

Proposals must encompass all technical aspects of the investigation from the initial studies through delivery of the data to the appropriate data repository and their analysis (the final part of the operations phase, Phase E). NASA Handbook NHB 7120.5, *Management of Major System Programs and Requirements*, delineates activities, milestones, and products typically associated with each of these phases and may be used as a reference in defining a team's mission approach. This Handbook is included in the Explorer Program Library (see Appendix D). Mission teams have the freedom to use their own processes, procedures, and methods, and the use of innovative processes is encouraged when cost, schedule, technical improvements, and reliability can be demonstrated.

Selected investigations shall have a product assurance program that follows the requirements of the ISO 9000 series, American National Standard, "Quality Systems - Model for Quality Assurance in Design, Development, Production, Installation, and Servicing," ANSI/ASQC Q9001-1994.

The investigations product assurance program must meet the requirements in the University-class Explorer Safety, Reliability, & Quality Assurance Requirements document available in the Explorer Program Library.

Investigation teams may use non-NASA or NASA navigation, tracking, control, communications, and other services. For Explorer proposals, however, costs for such services, whether obtained from NASA or from other sources, *must* be included in the cost estimate. Information on space communications capabilities and costing is given in the Ground Data Systems and Mission Operations and Data Analysis document available in the Explorer Program Library.

3.5 Management Requirements

Explorer mission investigation teams must be led by a single Principal Investigator (PI) who may be from any category of U.S. or non-U.S. organization, including educational institutions, industry or nonprofit institutions, or from one of the NASA Centers, the Jet Propulsion Laboratory (JPL), other Federally-funded research and development centers, or other U. S. Government agencies. Teams may be formed from any combination of these institutions.

NASA intends to allow the Principal Investigator and his/her team to use their own management processes, procedures, and methods to the fullest extent possible. Investigation teams should define the management approach best suited for their particular teaming arrangement. This approach should be commensurate with the investigation's implementation approach, while retaining a simple and effective management structure necessary to assure the adequate control of development within the cost and schedule constraints. The investigation team should develop a Work Breakdown Structure (WBS) that best fits its organizational approach and mission design concept. The PI is expected to be in charge of each investigation, with full responsibility for its scientific integrity. The PI is responsible for assembling a team to propose and implement the investigation. Proposers may obtain services from any source. (Services available through the NASA Goddard Space Flight Center (GSFC) are given in Appendix F. Please note that the level of detail required in the proposal is the same no matter what organizations, including GSFC, are part of the investigation team.) The PI is accountable to NASA for the scientific success of the investigation. Therefore, the PI must be prepared to recommend mission termination if, in his/her judgment, the successful achievement of established science objectives, as defined in the proposal, is no longer likely within the committed cost and schedule reserves.

In accordance with NASA's transfer of program management responsibility to its Centers, Explorer program management responsibility has been assigned to GSFC. In this role, GSFC is responsible for NASA's fiduciary responsibility to ensure that Explorer missions are achieved in compliance with committed cost, schedule, performance, reliability, and safety requirements. The level of GSFC's involvement in this role may vary from mission to mission depending on the implementing organization and other programmatic considerations. It is expected that the GSFC Explorer Program Office will work with the Principal Investigator and implementing organization to define roles and responsibilities to fulfill this responsibility in the most effective manner.

Each investigation must define the risk management approach it intends to use to ensure successful achievement of the mission objectives within established resource and schedule constraints. Included in this discussion of risk management should be risk mitigation plans for new technologies and the need for any long-lead items that need to be placed on a contract before the start of the development phase, to ensure timely delivery. In addition, any manufacturing, test, or other facilities needed to ensure successful completion of the proposed investigation should be identified.

Each selected investigation must have a Project Manager (PM) who will oversee the technical implementation of the investigation. The role, qualifications, and experience of the PM should be adequate to ensure that the technical and managerial needs of the investigation will be met.

3.6 Cost Requirements

3.6.1 Full Cost Accounting

Where NASA provided services are used, NASA Civil Service labor and supporting NASA Center infrastructure must be costed on a full cost accounting basis. If NASA guidance for full cost accounting has not been fully developed by the closing date for proposal submission or for completion of the concept study, NASA Centers may submit full cost proposals based on the instructions in the NASA Financial Management Manual, Section 9091-5, "Cost Principles for Reimbursable Agreements," or based on their own Center-approved full cost accounting models. Other Federal Government elements of proposals must follow their agency cost accounting standards for full cost. If no standards are in effect, the proposers must then follow the Managerial Cost Accounting Standards for the Federal Government as recommended by the Federal Accounting Standards Advisory Board.

3.6.2 Goods and/or Services Offered on a No Exchange of Funds Basis

Contributions of any kind, whether cash or noncash (property and services) to Explorer investigations by organizations other than the Office of Space Science are welcome. Values for all contributions of property and services shall be established in accordance with applicable cost principles. Such contributions may be applied to any part or parts of a mission. A letter of endorsement that contains a statement of financial commitment from each responsible organization offering to make a contribution to the investigation must be submitted with the proposals for all U.S. components. For non-U.S. components of proposals, see Section 3.7.

The cost of contributed hardware or software should be estimated as either: (1) the cost associated with the development and production of the item if this is the first time the item has been developed and if the mission represents the primary application for which the item was developed; or (2) the cost associated with the reproduction and modification of the item (i.e., any recurring and mission-unique costs) if this is not a first-time development. If an item is being developed primarily for an application other than the one in which it will

be used in the proposed investigation, then it may be considered as falling into the second category (with the estimated cost calculated as that associated with the reproduction and modification alone).

The cost of contributed labor and services should be consistent with rates paid for similar work in the offeror's organization. The cost of contributions does not need to include funding spent before the start of the investigation (before completing a grant or cooperative agreement with NASA). The value of materials and supplies shall be reasonable and shall not exceed the fair market value of the property at the time of the contribution.

3.6.3 NASA Cost

The NASA Cost is the funding that NASA would be expected to provide to the investigation team over the course of the investigation, beginning with selection and ending with the conclusion of Phase E. Examples of costs to be included are any upper stages, launch services, education and outreach activities, new technology, subcontracting costs (including fees), science teams, all personnel required to conduct the investigation, analyze and publish results, and deliver data in archival format, insurance, ground data system (see the Ground Data Systems and Mission Operations and Data Analysis document available in the Appendix D Explorer Program Library), labor (contractor), NASA civil servant costs, reserves, and contract fees. The specific total funding limits and limits for major mission elements are specified in sections 4 and 5. The NASA Cost is a consideration in the selection of investigations and in the continuing assessment of ongoing missions.

3.7 International Participation

Recognizing the potential scientific, technical, and financial benefits offered to all partners by international cooperation, participation by non-U.S. individuals and organizations as team members in Explorer investigations is welcomed. Participation may include, but is not limited to, the contribution of scientific instruments, the spacecraft (or a portion thereof), and the subsequent sharing of the data from the mission, all on a no-exchange-of-funds basis. Carriers, launch vehicles and launch services, and space operations may also be contributed by international partners and must be included in all calculations and discussions of the Total Mission Costs.

The direct purchase of goods and/or services from non-U.S. sources is permitted except for following restriction: NASA is precluded from purchasing non-U.S. launch vehicles, nor may funds provided to a mission team be used to purchase a launch vehicle from a non-U.S. source. The provision of launch services as a contribution to a Explorer mission by a non-U.S. partner is acceptable only on a no-exchange-of-funds basis (i.e., at no cost to NASA). Only those non-U.S. launch vehicles with demonstrated reliabilities may be proposed for Explorer missions.

Proposers are advised that a contract or subcontract by a U.S. team with a non-U.S. participant using funds derived from NASA must meet NASA and Federal regulations. Proposers are further advised that these regulations will place an additional burden on investigation teams that should be explicitly included in discussions of the investigation's cost, schedule, and risk management. Information regarding regulations governing the procurement of foreign goods or services is provided in Appendix C.

Any proposed international participation must be described at the same level of detail as that of U.S. partners. This includes the provision of cost, schedule, and management data in the proposal and in subsequent reviews. Failure to document cost and schedule data, management approaches and techniques, or failure to document the commitment of all team partners to those costs and schedules may cause a proposal to be found unacceptable.

Participation by non-U.S. individuals and/or institutions as team members or contributors to Explorer investigations must be endorsed by the institutions and/or governments involved. Institutional endorsement is required for contributions. If government support is required then a government endorsement is also needed. The letter of endorsement must provide evidence that the non-U.S. institution and/or government officials are aware and supportive of the proposed investigation and will pursue funding for the investigation if selected by NASA. Such endorsements must be submitted per the schedule in Section 1.3.

4.0 UNIVERSITY-CLASS EXPLORER CONSTRAINTS, GUIDELINES, AND REQUIREMENTS

4.1 University-class Explorer Guidelines

University-class Explorer investigations must be either a complete mission or a secondary payload on a spacecraft.

4.1.1 Complete Mission

A University-class Explorer complete mission is an investigation in which the Principal Investigator (PI) is responsible to NASA not only for the scientific integrity of the investigation, but also for the management of the complete mission, including provision of the spacecraft, instrument, and ground system. Such missions may be launched on expendable launch vehicles (ELV's), long duration balloons, or the Space Shuttle as free flying spacecraft.

- *Expendable Launch Vehicle (ELV)*
 - Although it is intended in the future to use the NASA Ultra-lite Expendable Launch Vehicle (UELVE) contract to provide ELV service, this capability is not available for this Announcement of Opportunity. Some of the other launch options that are available and may be proposed include launch services for launch as a co-manifest payload aboard a Med-lite Expendable Launch Vehicle (MELV), Small

Expendable Launch Vehicle (SELV), a Delta II, or Atlas-Centaur (IIA or IIAS) on commercial missions. NASA seeks to take advantage of all reasonable sources of commercial expendable launch vehicle (ELV) services while assuring that NASA-funded payloads are not exposed to excessive risk. The demonstrated reliability of the proposed launch vehicle and the resultant probability of mission success will be evaluated by NASA and factored into the feasibility of mission implementation evaluation criteria (see section 7.2). The PI must identify the secondary opportunity and provide evidence that the launch service provider agrees to manifest the investigation as part of the proposal. If the investigation is selected, NASA will directly contract with the launch service provider to acquire the launch service for the investigation.

- If a contributed launch is part of the proposal, it is the responsibility of the PI to find an organization that will contribute a launch. The demonstrated reliability and the resultant probability of mission success will be evaluated as described above for both contributed launch services and NASA funded launch services.
- The use of non-U.S. provided launch services may be proposed only on a no-exchange-of-funds basis.

- *Long Duration Balloon*

A long duration balloon may be proposed as the launch vehicle for a University-class Explorer. For this Announcement of Opportunity, a long duration balloon flight is defined as a balloon flight lasting more than one week. A complete mission using long duration balloons may include more than one flight as long as the first flight is before December 31, 2000, and the total investigation stays within the cost caps. **Note that the ultra long duration super pressure balloon capability that is under development for large payloads is not available for this announcement. See the Long Duration Balloon Opportunities document in the Explorer Program Library for additional information.**

- *Space Shuttle*

A free flying University-class Explorer investigation may propose using the Space Shuttle for launch services. Explorer investigations may utilize shuttle carriers such as the Spartan. The Principal Investigator is responsible for requesting an appropriate flight assignment, and supporting payload/spacecraft integration into the Shuttle. See the Space Shuttle Launch Opportunities document in the Explorer Program Library for additional information.

4.1.2 Secondary Payload

A University-class Explorer investigation may be conducted as a secondary payload attached to the Space Shuttle or to another free flying satellite. The PI is responsible for identifying the secondary payload opportunity, the provision of the instrument and ground systems, and is responsible to NASA for the scientific integrity of the investigation.

- *Space Shuttle*

A University-class Explorer investigation may propose conducting an investigation as a payload attached to the Space Shuttle. University-class Explorer investigations may utilize shuttle carriers such as the Hitchhiker and carriers from other agencies, into which the science instruments are integrated. The Principal Investigator is responsible for making arrangements for carrier use, requesting an appropriate flight assignment, and supporting payload integration into the Shuttle. See the Space Shuttle Launch Opportunities document in the Explorer Program Library for additional information.

- *Spacecraft*

The University-class Explorer investigation may be a secondary payload on a spacecraft that is not provided under this Announcement of Opportunity. This includes nearly any spacecraft, U.S. or non-U.S., commercial or governmental. Secondary payloads on a military satellite are allowed as long as the satellite is not planned for weapons testing. This spacecraft option is distinct from a Mission of Opportunity which requires the investigation to be part of the primary mission.

An investigation conducted using another launch method than those described above are allowed. However, suborbital rockets launches are covered under other solicitations and should not be proposed to this Announcement of Opportunity.

4.1.3 Selection

It is anticipated that two University-class Explorer investigations will be selected through this Announcement of Opportunity, with each awarded either a grant, or cooperative agreement for a concept study and subsequent mission phases. One or more additional University-class Explorer investigations may be offered selection as unfunded alternates.

A concept study will be conducted by each selected investigation team. The required duration and cost (up to \$250K) of the concept study should be part of the initial proposal. See the Guidelines for Concept Study Preparation available in the Explorer Program Library for information on the concept study to be conducted by the investigation team.

Each mission's concept study must conclude with a commitment by the PI for the cost, schedule, and scientific performance of the investigation. *The estimated NASA Cost determined during the concept study shall not increase by more than 20% from that offered in the original proposal and shall not exceed the cost cap.* If at any time the cost, schedule, or scientific performance commitments appears to be in jeopardy, the investigation will be subject to cancellation. The University-class Explorer program does not maintain a reserve pool from which investigations exceeding their cost commitments may draw.

If, at the conclusion of the concept study, a primary mission is judged not suitable to proceed, then an alternate mission may be funded for implementation to replace it.

4.2 Historically Black Colleges and Universities (HBCU's) and Other Minority Universities (OMU's) Participation

The Office of Space Science is committed to the visible and meaningful participation of HBCU's/OMU's in space science research. The Office of Space Science strongly encourages the participation of HBCU's/OMU's in University-class Explorer investigations, either as Principal or Co-Investigators, who provide any aspect of hardware or software development, analysis, design, integration and test of the instruments, spacecraft ground support equipment, ground data system, and mission operations and data analysis. Recognizing that many HBCU's and OMU's have only limited infrastructure necessary to carry out space science and space flight missions, the Office of Equal Opportunity Programs will consider providing capital investment funding to enhance the capacity of HBCU's and OMU's on successful proposing teams to carry out their mission responsibilities. Such capital investments must provide infrastructure germane to the proposed University-class Explorer mission and of long-term benefit to the HBCU/OMU and might include items such as human resources, facilities, or equipment. The capital investment funding is limited to no more than \$500 K per selected project and is not included in the funding limits described elsewhere in Section 4. Institutions that are eligible for this benefit are those defined in 52.226-2 of the FAR and Tribal Colleges as follows:

A tribal college or university ("tribal college") as cited in section 532 of the Equity in Educational Land-Grant Status Act of 1994 (7 U.S.C. 301 note), any other institution that qualifies for funding under the Tribally Controlled Community College Assistance Act of 1978, (25 U.S.C. 1801 et seq.), or Navajo Community College, authorized in the Navajo Community College Assistance Act of 1978, Public Law 95-471, title II (25 U.S.C. 640a note).

4.3 Cost and Schedule Requirements for University-class Explorer Missions

The University-class Explorer program is part of an effort to develop frequent space science investigations of modest scope. To this end, NASA will limit its funding of University-class Explorer missions to \$13 million. Further, the schedule for investigations selected through this Announcement of Opportunity is expected to be such that launch can take place before December 31, 2000. The proposer must specify the launch date in the proposal. Phase C/D is defined as ending after launch and instrument checkout (up to 30 days if applicable). Procurement of long lead materials is permitted during the Phase B/C time frame and should be defined early in the concept study. No time constraint is placed on Phase E but the overall cost must be contained within the \$13 M cost to NASA

4.3.1 NASA Cost

For the University-class Explorer, the funding by NASA is limited to \$13 million which includes funding for all phases and all elements (launch services, Phase B through Phase E, mission operations and data analysis). Although the launch services costs of the Space Shuttle and other launch services will be funded directly by NASA, these costs are none-the-less to be included in the proposal. Launch services may also be proposed at no cost to NASA as part of a teaming proposal. For proposal purposes, the launch vehicle cost to be used to calculate the NASA Cost for the investigation from the Space Shuttle is provided in the Space Shuttle Launch Opportunities document available in the Explorer Program Library. Launch services costs for long duration balloon missions may include mission required costs necessary to conduct the investigation (see the Long Duration Balloon Opportunities document in the Explorer Program Library). Proposers must estimate the total NASA Cost in the proposal. The specific cost information required for proposals is contained in Appendix B.

4.3.2. Total Mission Cost

The Total Mission Cost is defined as all costs that are necessary to complete an investigation beginning with selection through Phase E, including non-NASA civil servant costs, and contributions from U.S. and non-U.S. entities. In general, proposers should assume all costs must be included unless specifically excluded. Proposers must estimate the Total Mission Cost in the proposal as described in Appendix B, table B1. The Total Mission Cost, including contributions, may exceed the NASA Cost.

The Total Mission Cost includes the total NASA costs and goods and/or services offered on a no exchange of funds basis. There is no limitation on the amount of goods and/or services offered by a non-U.S. or U.S. organization on a no exchange of funds basis toward the Ground Data System Development, Mission Operations and Data Analysis, or Launch services portion of the investigation. Partners may also contribute to the definition, design, and development phases of the investigation. However, the value of a proposed investigation's mission definition, design, and development, including all non-NASA funds, is limited to \$16M less any amount that NASA may pay for launch services, ground systems development, and mission operations and data analysis.

5.0 MISSIONS OF OPPORTUNITY CONSTRAINTS, GUIDELINES, AND REQUIREMENTS

5.1 Missions of Opportunity Background

By funding U.S. participation in Missions of Opportunity, NASA seeks to bring the capabilities of the U.S. scientific community to bear on important scientific missions conducted as part of a non-NASA space science program.

Typically such missions are sponsored by non-U.S. governments, although space science missions from other U.S. agencies are equally qualified.

For Missions of Opportunity, the proposer offers to participate in a non-NASA Space Science mission that is planned or that has been approved by its sponsoring organization. Such participation could take many forms, such as providing a complete science instrument, providing hardware components of a science instrument, or providing expertise in critical areas of the mission. However, the proposed participation must be part of the primary mission. NASA will evaluate the proposed investigation, not the sponsor's entire mission. While the investigator is not required to document the entire mission of the sponsor, the U.S. investigator must fully document their complete investigation in the proposal.

Note that selection by NASA through this Announcement of Opportunity does not constitute selection of the investigation as part of the mission; which necessarily is a decision made by the sponsor of the mission. Instead, selection is a commitment by NASA to fund the U.S. portion of the investigation as part of the Explorer program, although funding beyond basic studies does not begin until detailed design of the mission itself is underway. If an investigation is selected both by NASA and by the mission sponsor, the PI is responsible to NASA for the scientific integrity and the management of their contribution to the mission.

Proposers for non-NASA, non-U.S. missions should recognize that all such proposals must be consistent, and in compliance with, all U.S. Government laws, regulations, and policies governing the export of hardware and/or technical data. Further, any such successful proposal will require the appropriate agreement(s) and export license(s). Therefore, all proposers for non-U.S. missions should contact the Office of External Relations, Space Science and Aeronautics Division, at NASA Headquarters at the address in Section 6.1.4 during the preparation of the concept study to obtain information about U.S. Government laws or policies (e.g., export control), as well as NASA policy and procedures regulating international cooperation that may be relevant to the proposal.

If a Mission of Opportunity investigation is selected, NASA will commit to funding the U.S. participation in the investigation as long as commitments to NASA are met. A selected Mission of Opportunity investigation will be awarded a grant or cooperative agreement and will be expected to submit a concept study report to NASA for detailed review. This report will conclude with a commitment by the PI for the cost, schedule, and scientific performance of the investigation. If at any time this commitment appears to be in jeopardy, the investigation will be subject to cancellation. Like other missions proposed to this Announcement of Opportunity, the NASA funding is subject to cancellation if there is a cost overrun charged to NASA for any reason, including a launch delay caused by the non-NASA partner.

A technical review will be held prior to the start of phase C/D. Assuming a positive outcome, NASA intends to confirm the investigation to proceed to

development. As a condition for confirmation, the organization sponsoring the full mission must make a commitment to enter into an appropriate agreement with NASA that shall include provisions for sharing of flight data.

5.2 General Guidelines for Missions of Opportunity

Missions of Opportunity are conducted on a no-exchange-of-funds basis between NASA and the organization sponsoring the mission.

5.3 Science Requirements

Mission of Opportunity investigation teams will have data analysis responsibilities defined by the policies of the mission sponsor; nevertheless, NASA expects that the mission sponsor will enter into an agreement with NASA to assure that data returned from at least those aspects of the mission in which NASA support is involved, if not the entire mission, will be made available to the U.S. scientific community in a timely way.

5.4 Cost and Schedule Requirements for Missions of Opportunity

It is incumbent on the proposing investigator to provide evidence that the sponsoring organization intends to fund the mission and that the endorsement of NASA for U.S. participation is required by the sponsoring organization prior to December 31, 1998. The launch date is not constrained. If a commitment from NASA is not needed by the sponsoring organization before December 31, 1998, then the proposal should be submitted to a subsequent Explorer program Announcement of Opportunity. Although the level of funding available for each proposal will be decided on a case-by-case basis, proposers should be aware that any Mission of Opportunity investigation costing the Explorer program more than \$20 million in real year dollars will be difficult to support (this includes all phases of the investigation). NASA's funding for a selected investigation's concept study will be limited to \$250K. Follow-on work prior to selection by the mission's sponsoring organization will be limited to \$100K, and the limit for all studies prior to the initiation of mission detailed design (Phase C) is 25% of the total NASA commitment for funding of the investigation. The PI assumes all risk for delays in the mission and should propose appropriate reserves.

Proposers must estimate the NASA Cost in the proposal. The specific cost information required for proposals is contained in Appendix B and table B2. ***The estimated NASA Cost described in the concept study report shall not increase by more than 20% from that offered in the original proposal.*** Once established at the end of the concept study, the estimated cost baseline must assure adequate funding to meet cost-to-complete requirements.

6.0 PROPOSAL PREPARATION AND SUBMISSION

6.1 Preproposal Activities

6.1.1 Explorer Program Library

The Explorer Program Library is intended to provide additional background information on the Explorer program including science goals, technology and education/outreach strategies, and background information on management aspects of flight programs. Additional information on the Explorer Program Library is contained in Appendix D.

6.1.2 Technical and Scientific Inquiries

Inquiries of a technical nature should be directed to Dr. David Gilman, the Explorer Program Executive, at the address below. Inquiries of a scientific nature should be directed to Dr. Louis Kaluziński, the University-class Explorer Program Scientist, at his address below. Inquiries are preferred in writing and may be sent by FAX or e-mail.

Dr. David Gilman
Mission and Payload Development Division
Code SD
National Aeronautics and Space
Administration
Washington, DC 20546-0001
Fax Number: 202-358-3987
E-mail: David.A.Gilman@larc.nasa.gov
Phone: 202-358-0349

Dr. Louis Kaluziński
Research Program Management Division
Code SR
National Aeronautics and Space
Administration
Washington, DC 20546-0001
Fax Number: 202-358-3097
E-mail: lkaluziński@hq.nasa.gov
Phone: 202-358-0365

6.1.3 Preproposal Questions and Answers

In lieu of a preproposal conference, questions about this Announcement of Opportunity may be sent to either Dr. Gilman or Dr. Kaluziński at the address above. Answers will be provided within five working days. Answers to all questions (with anonymity preserved) will also be posted following the University-class Explorer and Missions of Opportunity, Announcement of Opportunity and may be accessed through "Research Opportunities" from the menu at the internet address <<http://www.hq.nasa.gov/office/oss/>>. Questions and answers will be posted at the end of each week during the proposal preparation period. Prospective proposers are advised to check this site for new postings.

6.1.4 Notice of Intent to Propose

To assist NASA's planning of the proposal evaluation process, a Notice of Intent should be submitted by all prospective proposers in accordance with the schedule in Paragraph 1.3.

This Notice must be typewritten in English and may be submitted in one of the following three ways:

By mail to:

University-class Explorer 1997 Support Office
Jorge Scientific Corporation
400 Virginia Avenue SW, Suite 700
Washington, DC 20024

or by FAX to:

University-class Explorer 1997 Support Office
202-554-2970

or by e-mail to:

<TBD@hq.nasa.gov>, with Subject designated as <UNEX NOI - (PI Name)>

To the extent the following information is known by the due date, the Notice of Intent should include:

- (a) Names, addresses, telephone numbers, e-mail addresses, and fax numbers of the (1) Principal Investigator; (2) any Co-Investigators; and (3) the lead representative from each organization (industrial, academic, educational, not-for-profit, and/or Federal) expected to be included in the proposal team;
- (b) Title of the proposed investigation, a brief statement of the scientific objectives, and the primary NASA science theme (see Section 1.1) that the investigation supports;
- (c) Mission mode (University-class Explorer or Mission of Opportunity) and launch vehicle;
- (d) Identification of any new technologies that may be employed as part of the mission;
- (e) A brief statement describing the education/public outreach objectives in the proposed investigation; and
- (f) A brief statement describing any HBCU/OMU participation expected in the proposed investigation.

Material in a Notice of Intent is for NASA planning purposes only, is confidential, and is not binding on the submitter. Principal Investigators whose investigation teams include personnel from non-U.S. institutions must also send a copy of their Notice of Intent to:

Ms. Bettye Jones
Space Science and Aeronautics Division
Code IS
Ref: University-class Explorer 1997
National Aeronautics and Space Administration
Washington, DC 20546-0001
USA
Phone: 202-358-1664
FAX: 202-358-3029

In cases where investigators or team members from non-U.S. institutions are to participate, their names, addresses, and affiliations must be included in the Notice of Intent, even if the details of their participation cannot be formalized by the deadline for receipt of the Notice of Intent.

6.2 Format and Content of Proposals

General NASA guidance for proposals in general is given in Appendix A and the NASA Grant and Cooperative Agreement Handbook 14 CFR part 1260, which is considered binding unless specifically amended in this Section of this Announcement of Opportunity. A uniform proposal format is required from all proposers to aid in proposal evaluation. The required proposal format and contents are summarized in Appendix B. Failure to follow this outline may result in reduced ratings during the evaluation process, or in extreme cases, could lead to rejection of the proposal without review.

6.3 Submission Information

6.3.1 Certification

The original copy of all proposals shall include a letter of endorsement signed by an institutional official from each partner and each organization expecting to provide contributions of hardware, software, facilities, services, etc. This official must certify institutional support and sponsorship of the investigation, as well as concurrence in the management and financial parts of the proposal. Non-U.S. organizations must submit such endorsements to Ms. Bettye Jones with a copy to the University-class Explorer 1997 Support Office at the addresses given in Section 6.1 by the due date given in the schedule in Section 1.3. Additional certifications identified in Appendix E are required and must be included with the original, signed proposal.

6.3.2 Quantity

Proposers must provide 30 copies of their proposal, plus the original signed proposal, on or before the proposal deadline given in Section 1.3.

6.3.3 Submittal Address

All proposals must be received at the following address by the schedule in Section 1.3:

University-class Explorer 1997 Support Office
Jorge Scientific Corporation
400 Virginia Avenue SW, Suite 700
Washington, DC 20024

Point of contact for commercial delivery: TBD

Furthermore, one copy of any proposal that includes any non-U.S. participants and/or institutional and governmental commitments must be sent to Ms. Bettye Jones at the address listed in Section 6.1.4.

6.3.4 *Deadline*

All proposals must be received at the address above by the closing date specified in Section 1.3. All proposals received after the closing date will be treated in accordance with NASA's provisions for late proposals (Appendix A, Section V).

6.3.5 *Notification of Receipt*

NASA will notify the proposers in writing that their proposals have been received. Proposers not receiving this confirmation within two weeks after submittal of their proposals should contact Dr. David Gilman at the address given in Section 6.1.2.

7.0 PROPOSAL EVALUATION, SELECTION, AND IMPLEMENTATION

7.1 Evaluation, Selection, and Debriefing Processes

All proposals submitted in response to this Announcement of Opportunity will be subjected to a preliminary screening to determine their compliance to the constraints, requirements, and guidelines of the Announcement of Opportunity. Proposals not in compliance will be returned to the proposer without review. Proposals in compliance with this Announcement of Opportunity will then be assessed against the criteria given in Section 7.2 by panels of individuals who are peers of the proposers in the relevant technical, scientific, and other areas. Panels will be instructed to evaluate all proposals independently and not to compare larger missions with smaller ones. These panels may be augmented through the solicitation of mail-in reviews as well, which the panels have the right to accept, modify, or reject. Proposers should be aware that during the evaluation and selection process, NASA may request clarification of a specific point or points in a proposal. Such a request and the proposer's response shall be in writing.

Once the panel evaluations are complete, a Panel Executive Committee, composed wholly of Civil Servants, will convene to consider the peer review results. This Executive Committee will then finalize the evaluations of each criteria for each proposal. Based on these results the Executive Committee will then serve as an *Ad Hoc* Subcommittee of the Space Science Steering Committee (SSSC; see further below in this Section) to categorize the proposals in accordance with procedures required by NASA FAR Supplement Part 1872.0. These Categories are defined as below. Note that NASA anticipates selecting and funding only Category I investigations.

Category I. Well conceived and scientifically and technically sound investigation pertinent to the goals of the program and the Announcement of Opportunity's objectives and offered by a competent investigator from an institution capable of supplying the necessary

support to ensure that any essential flight hardware or other support can be delivered on time and that data can be properly reduced, analyzed, interpreted, and published in a reasonable time. Investigations in Category I are recommended for acceptance and normally will be displaced only by other Category I investigations.

Category II. Well conceived and scientifically or technically sound investigations which are recommended for acceptance, but at a lower priority than Category I.

Category III. Scientifically or technically sound investigations which require further development.

Category IV. Proposed investigations which are recommended for rejection for the particular opportunity under consideration, whatever the reason.

The results of the proposal evaluations and categorizations will then be presented by the Headquarters University-class Explorer Program Scientist to the SSSC, which is composed wholly of NASA Civil Servants and appointed by the Associate Administrator for Space Science. The SSSC will conduct an independent review of the evaluation and categorization processes regarding both their compliance to established policies and practices as well as their completeness, self-consistency, and adequacy of all materials related thereto. After this review, the final evaluation and categorization results, the total proposed cost, and the confidence that the mission can be accomplished within those proposed costs will be forwarded by the SSSC to the Space Science Board of Directors and the Associate Administrator who will make the final selections.

Selected proposers will be notified immediately by phone and by letter and provided with instructions for initiating their concept study. Proposers not selected will be notified immediately by letter and will be offered a debriefing. Such debriefings may be by telephone or, if the investigation team prefers, may be conducted in person at NASA Headquarters. NASA funds may not be used to defray travel costs by the proposer for a debriefing.

7.2 Evaluation Criteria

The evaluation criteria below, which will be used to evaluate and categorize proposals as described in Section 7.1, are designed to determine those proposed investigations with the best overall combination of relevant characteristics. For Missions of Opportunity, the proposed investigation encompasses only the contribution to the mission, not the entire mission. The evaluation factors (which are defined more fully in subsections below) are as follows:

- The scientific merit of the proposed investigation;
- The technical merit and feasibility of the proposed investigation;
- The feasibility of the proposed approach for mission implementation, including the realism of the proposed cost;
- The plan for education, outreach, new technology, small disadvantaged business and Minority Institution activities; and

- The participation of Historically Black Colleges and Universities and Other Minority Universities.

These five criteria are listed in descending order of priority with the first two together having a combined weight of approximately twice that of the final three together.

7.2.1 Scientific Merit of the Proposed Investigation

To evaluate the intrinsic scientific merit, the goals and objectives of the proposed investigation will be assessed to determine the impact of the investigation on science as a whole and, in particular, on the U.S. space science program (see goals in Section 2.1). This evaluation will include how well the investigation fills gaps in our understanding of space science and thereby provides for progress in a space science theme, and how well the proposed investigation may synergistically support other ongoing space science missions sponsored by NASA or a non-U.S. space agency, and whether or not it provides ancillary benefits to the U.S. space science program. Another major element in this assessment will be whether the data that are to be gathered will be sufficient to complete the proposed investigation.

7.2.2 Technical Merit and Feasibility of the Proposed Investigation

Each proposed investigation will be evaluated for its technical merit, feasibility, and the probability of success. Technical merit and feasibility will be evaluated by assessing the degree to which the proposed instrument(s) can be built using the proposed technologies and the degree to which the proposed instrument(s) can provide the necessary data, as well as the degree to which the mission will support the accomplishment of acquisition of the required data. Other major elements include the proposed data analysis and archiving plan, and the proposed plan for the timely release of the data to the public domain. Should a new technology that represents an untested advance in the state of the art be proposed for use, an independent assessment will be made of the likelihood of its success. Finally, the probability of success will be evaluated by assessing the experience, expertise, and organizational structure of the science team and the technical risk associated with overall mission design and/or instrument set.

7.2.3 Feasibility of the Proposed Approach for Mission Implementation

The technical and management approaches will be evaluated to assess the likelihood that the investigation can be implemented as proposed. This includes an assessment of the realism of the proposed cost. For University-class Explorer investigations, this will also include an assessment of the likelihood of launching in 1999 and 2000. Since it is recognized that teaming arrangements for implementing the mission may not be complete before the proposal closing date, proposers will not be penalized if the proposal indicates only candidate (but credible) implementation approaches for the spacecraft,

launch vehicle, communications, and ground systems that should reasonably allow successful implementation of the mission.

7.2.4 Education, Outreach, New Technology, HBCU's/OMU's, and Small Disadvantaged Business Activities

The tentative plans for education, outreach, new technology, small disadvantaged business plans, and participation of HBCU's and OMU's described in the proposal will be rated by evaluating their credibility and the degree to which they propose to meet the program requirements in each of these areas as described in Section 3.3.

7.2.5 Participation of Historically Black Colleges and Universities and Other Minority Universities

For University-class Explorers, HBCU's/OMU's participation will be evaluated on the extent to which the HBCU/OMU contributions are integral to the mission and are based on the demonstrated expertise and experience of the HBCU's/OMU's involved. The items proposed under the Office of Equal Opportunity Programs capital investment funding will be evaluated on the extent that they are genuinely capital investments (as opposed to ordinary mission expenses), and that they provide infrastructure germane to the proposed University-class Explorer mission and of long-term benefit to the HBCU/OMU.

7.3 Selection Factors

As described in section 7.1 the results of the proposal evaluations based on the criteria above and categorizations will be considered in the selection process. In addition, the total proposed NASA Cost will also be considered in the final selections.

With regard to final selections, proposers to this Announcement of Opportunity should recognize that the program of the Office of Space Science is an evolving activity that critically depends upon Administration policies and budgets as well as space science objectives and priorities, any of which may change quickly with time. Therefore, it is incumbent upon the Associate Administrator of the Office of Space Science to use all relevant science planning, policy, and cost considerations when making selection(s) among top ranked proposals submitted in response to this Announcement of Opportunity. In addition, proposers to this Announcement of Opportunity are advised that it is an objective, but not a requirement, that the final selections reflect a balance among the applicable scientific themes listed in Section 1.1 of this Announcement of Opportunity.

The overriding consideration for the final selection of proposals submitted in response to this Announcement of Opportunity will be to maximize scientific return within the available budget. Depending on the availability of proposals of appropriate merit, this objective may be achieved by the selection of at least two investigations each at the cost ceiling for University-class Explorer investigations, or a larger number of significantly lower cost investigations,

or a combination of investigations of various costs. Since one of the University-class Explorer program goals is to lower the total mission cost to \$5 million for future solicitations, exceptionally low cost missions (significantly under the cost cap of \$13 million) are encouraged. NASA may choose to select a third mission based on its low cost and relatively high evaluation.

7.4 Implementation Activities

7.4.1 Notification of Selection

Following selection, the PI's of the selected investigations will be notified immediately by telephone, followed by formal written notification. The formal notification will include any issues noted during the evaluation that may require resolution and any special instructions for the concept study. A Project Initiation Conference will be held immediately after selection. The purpose is to clarify requirements and responsibilities of all parties having roles in the mission, including launch service personnel. Proposers of investigations that were not selected will be notified in writing and offered a debriefing by phone or in person.

7.4.2 Award Administration and Funding

Selection under this Announcement of Opportunity will result in a cooperative agreement if government services or support are proposed as part of the investigation. Otherwise the award will be in the form of a grant.

7.4.3 Confirmation of Investigations

At the end of the definition phase, GSFC will conduct a technical review to determine the investigation's readiness to proceed before authorizing the investigation to spend more than 25 percent of the total NASA commitment for all phases (see section 3.0 of the University-class Explorer Safety, Reliability, & Quality Assurance Requirements document available in the Explorer Program Library). This detailed review will evaluate the implementing details of the selected investigations, namely any modifications to the scientific objectives, the proposed cost to NASA, design details of the experiment hardware, plans for mission implementation including technical and management factors, details of the education and public outreach programs, and plans for the infusion of new technology (as appropriate). The investigation must demonstrate satisfactory technical, cost and schedule performance. In addition, for any Mission of Opportunity, a commitment from the organization sponsoring the full mission to enter into an appropriate agreement with NASA is required. Results of this Confirmation Review and a decision to proceed (or not) will be provided within 30 days of the review. Assuming a positive outcome, NASA intends to exercise the option for mission implementation.

8.0 CONCLUSION

The Explorer program continues to represent a challenging new way for NASA to accomplish important scientific exploration. It provides an opportunity for frequent flights to execute important space science investigations, as well as to generate opportunities to enhance education initiatives, to encourage participation of HBCU's/OMU's in space science, and to engage the public in the excitement of science discoveries. NASA invites both the U.S. and international science communities to participate in proposals for University-class Explorer and Missions of Opportunity investigations to be carried out as a result of this Announcement.

Alan N. Bunner
Science Program Director
Structure and Evolution of the Universe
Office of Space Science

George L. Withbroe
Science Program Director
The Sun-Earth Connection
Office of Space Science

Edward J. Weiler
Science Program Director
Astronomical Search for Origins
and Planetary Systems
Office of Space Science

Carl Pilcher
Acting, Science Program
Director
Solar System Exploration
Office of Space Science

Wesley T. Huntress, Jr.
Associate Administrator
for Space Science

APPENDIX A

GENERAL INSTRUCTIONS AND PROVISIONS

I. INSTRUMENTATION AND/OR GROUND EQUIPMENT

By submitting a proposal, the investigator and institution agree that NASA has the option to accept all or part of the offeror's plan to provide the instrumentation or ground support equipment required for the investigation, or NASA may furnish or obtain such instrumentation or equipment from any other source as determined by the selecting official. In addition, NASA reserves the right to require use of Government instrumentation or property that subsequently becomes available, with or without modification, that meets the investigative objectives.

II. TENTATIVE SELECTIONS, PHASED DEVELOPMENT, PARTIAL SELECTIONS, AND PARTICIPATION WITH OTHERS

By submitting a proposal, the investigator and the organization agree that NASA has the option to make a tentative selection pending a successful feasibility or definition effort. NASA has the option to contract in phases for a proposed experiment, and to discontinue the investigative effort at the completion of any phase. NASA may desire to select only a portion of the proposed investigation and/or that the individual participates with other investigators in a joint investigation. In this case, the investigator will be given the opportunity to accept or decline such partial acceptance or participation with other investigators prior to a NASA selection. Where participation with other investigators as a team is agreed to, one of the team members will normally be designated as its leader or contact point.

III. NONDOMESTIC PROPOSALS

The guidelines for proposals originating outside of the United States are the same as those for proposals originating within the United States, except that the additional conditions described in Sections 3.7 and 3.8 shall also apply.

IV. TREATMENT OF PROPOSAL DATA

It is NASA policy to use information contained in proposals and quotations for evaluation purposes only. While this policy does not require that the proposal or quotation bear a restrictive notice, offerors or quoters should, in order to maximize protection of trade secrets or other information that is commercial or financial and confidential or privileged, place the following notice on the title page of the proposal or quotation and specify the information, subject to the notice by inserting appropriate identification, such as page numbers, in the notice.

In any event, information (data) contained in proposals and quotations will be protected to the extent permitted by law, but NASA assumes no liability for use and disclosure of information not made subject to the notice.

RESTRICTION ON USE AND DISCLOSURE OF PROPOSAL AND QUOTATION INFORMATION (DATA)

The information (data) contained in (insert page numbers or other identification) of this proposal or quotation constitutes a trade secret and/or information that is commercial or financial and confidential or privileged. It is furnished to the Government in confidence with the understanding that it will not, without permission of the offeror, be used or disclosed for other than evaluation purposes; provided, however, that in the event a contract is awarded on the basis of this proposal or quotation, the Government shall have the right to use and disclose this information (data) to the extent provided in the contract. This restriction does not limit the Government's right to use or disclose this information (data), if obtained from another source without restriction.

V. LATE PROPOSALS

The Government reserves the right to consider proposals or modifications thereof received after the date indicated for such purpose, if the selecting official deems it to offer NASA a significant technical advantage or cost reduction. (See NFS 18-15.412.)

VI. SOURCE OF SPACE INVESTIGATIONS

Investigators are advised that candidate investigations for space missions can come from many sources. These sources include those selected through the A, those generated by NASA in-house research and development, and those derived from contracts and other agreements between NASA and external entities.

VII. DISCLOSURE OF PROPOSALS OUTSIDE THE GOVERNMENT

NASA may find it necessary to obtain proposal evaluation assistance outside the Government. Where NASA determines it is necessary to disclose a proposal outside the Government for evaluation purposes, arrangements will be made with the evaluator for appropriate handling of the proposal information. Therefore, by submitting a proposal, the investigator and institution agree that NASA may have the proposal evaluated outside the Government. If the investigator or institution desires to preclude NASA from using an outside evaluation, the investigator or institution should so indicate on the cover. However, notice is given that if NASA is precluded from using outside evaluation, it may be unable to consider the proposal.

APPENDIX B

GUIDELINES FOR PROPOSAL PREPARATION

The following guidelines apply to the preparation of proposals in response to this University-class Explorer and Missions of Opportunity Announcement of Opportunity. The material presented is a guide for the prospective proposer, and is not intended to be all encompassing. The proposer should, however, provide information relative to those items applicable, as well as other items required by the Announcement of Opportunity. In the event of an apparent conflict between the guidelines in this Appendix and those contained within the body of the Announcement of Opportunity, those within the Announcement of Opportunity shall take precedence.

GENERAL GUIDELINES

All documents must be typewritten in English, use the International System (SI) of units, and be clearly legible. Submission of proposal material by facsimile (fax), electronic media, videotape, floppy disk, etc., is not acceptable. In evaluating proposals, NASA will only consider printed material. No proposal may reference a World Wide Web site for any data or material related to the proposal.

The proposal must consist of only one volume, with readily identified sections corresponding to sections D through I given below. Note the guidance on page count for the various sections specified in the table on page B-2.

In order to allow for recycling of proposals after the review process, all proposals and copies must be submitted on plain white paper only (e.g., no cardboard stock or plastic covers, no colored paper, etc.). Photographs and color figures are permitted if printed on recyclable white paper only. The original signed copy (including cover page, certifications, and non-U.S. endorsements) should be bound in a manner that makes it easy to disassemble for reproduction. Except for the original, two-sided copies are preferred. Every side upon which printing appears will be counted against the page limits.

Proposals shall contain no more than 35 pages, exclusive of the cover page and a table of contents (see Table on page B-2), including no more than three fold out pages (28 x 43 cm; i.e., 11 x 17 inches). All pages other than fold out pages shall be 8.5 x 11 inches or A4 European standard. The following table provides guidance on page count within the proposal:

Section	Page Limits
Science Investigation description	20
Education and Outreach, New Technology, and Small Disadvantaged Business Plan	3
Historically Black Colleges and Universities and Other Minority Universities Plan (UNEX only)	2
Mission Implementation	7
Management, Schedule, and Cost Estimating Methodology	3
Appendices: (no others permitted) Resumes (one page per team member) Letters of Endorsement Statement(s) of Work (SOW) Reference List (optional)	No page limit, but small size encouraged

Single- or double-column format is acceptable. In complying with the page limit, no page should contain more than 55 lines of text and the type font should not be smaller than 12-point Times (i.e., approximately 15 characters per inch). Figure captions should be in 12 point. Smaller font is allowed within figures and in the cost table.

The content of each proposal is described below.

A. INVESTIGATION SUMMARY

A summary of the proposed investigation must be included with the proposal. The Investigation Summary does not count against the page limit. The information conveyed on this Investigation Summary should include the following: names of the PI and Co-I's, abstract, the primary and any secondary science themes that the proposal addressees, mission mode (University-class Explorer or Mission of Opportunity), and anticipated launch vehicle. The form to be used for this Summary is located at the end of this Appendix (pages B-13 and B-14).

B. COVER PAGE

A cover page must be a part of the proposal, but will not be counted against the page limit. It must be signed by the Principal Investigator and an official by title of the investigator's organization who is authorized to commit the organization. The full names of the Principal Investigator and the authorizing official, their addresses with zip code, telephone and fax numbers, and electronic mail addresses, shall be included.

C. TABLE OF CONTENTS

The proposal should contain a table of contents, which will not be counted against the page limit. This table of contents should parallel the outlines provided below in Sections D through I.

D. SCIENCE

The science section should describe the scientific objectives of the proposed investigation, including the value of the investigation to the space science themes. The primary science theme to which the investigation applies should be identified. A discussion of the scientific products and how the science products and data obtained will be used to fulfill the scientific objectives should be provided. A discussion of how the science data will be obtained, including a plan for delivery of the products, and the individuals responsible for the data delivery, should also be provided.

1. Scientific Goals and Objectives. This section should consist of a discussion of the goals and objectives of the investigation, their value to the primary and any secondary science themes, and their relationships to past, current, and future investigations and missions. It should describe the history and basis for the proposal and discuss the need for such an investigation. An overview of the mission should be provided.

The measurements to be taken in the course of the mission, the data to be returned, and the approach that will be taken in analyzing the data to achieve the scientific objectives of the investigation should be discussed. This description should identify the investigation to be performed, the quality of the data to be returned (resolution, coverage, pointing accuracy, measurement precision, etc.), and the quantity of data to be returned (bits, images, etc.). The relationship between the data products generated and the scientific objectives should be explicitly described, as should the expected results.

2. Science Implementation.

- a. Instrumentation. This section should describe the instrumentation and the criteria used for its selection. It should identify the individual instruments and instrument systems, including their characteristics and requirements. It should indicate items that are proposed to be developed, as well as any existing instrumentation or design/flight heritage.

A preliminary description of each instrument design with a block diagram showing the instrument systems and their interfaces should be included, along with a description of the estimated performance of the instrument.

Performance characteristics should be related to the measurement and investigation objectives as stated in the proposal. Such characteristics include a discussion of the data rates, fields of view, resolution, precision/sensitivity, pointing accuracy, etc.

- b. Mission. Mission observing strategy and spacecraft performance required for obtaining the necessary data with the proposed instrumentation must be described. The concept for operating the mission and the requirements for mission operations must be given.
- c. Data Analysis and Archiving. The data reduction and analysis plan, after the data have been delivered to the ground, should be discussed, including the method and format of the data reduction, data validation, and preliminary analysis. The process by which data will be prepared for archiving should be discussed, including a list of the specific data products and the individual team members responsible for the data products. The plan must include a detailed schedule for the submission of raw and reduced data to the appropriate data archive in the proper formats, media, etc. Delivery of the data to the data archive must take place in the shortest time possible.
- d. Science Team. This section must identify the investigation science team and their roles and responsibilities. The capabilities and experience of all members of the proposed science team should be described. Resumes or curriculum vitae of team members should be included as attachments to the proposal (see Section I, below). The role of each science team member in the investigation should be explicitly defined and justified.

E. EDUCATION, OUTREACH, NEW TECHNOLOGY, AND SMALL DISADVANTAGED BUSINESS PLAN

The education, outreach, new technology, and small disadvantaged business section shall provide a summary of the benefits offered by the mission beyond the scientific benefits. This plan should reflect the proposer's commitment to achieving the goals of the OSS education and outreach strategy as reflected in the Implementation Plan for that strategy, participation of small disadvantaged business, and the use of new technology in the implementation of the investigations. Further information on the OSS' broad approach to education and outreach can be found in *Implementing the Office of Space Science (OSS) Education and Outreach Strategy*, (see contents of the Explorer Program Library, Appendix D). Guidance on the use of new technology in investigations can be found in the *OSS Integrated Technology Strategy* in the Explorer Program Library.

F. HISTORICALLY BLACK COLLEGES AND UNIVERSITIES AND OTHER MINORITY UNIVERSITIES PLAN

The Historically Black Colleges and Universities and Other Minority Universities (HBCU's/OMU's) section shall provide a summary for the plan for HBCU's/OMU's involvement in the proposed mission, and the HBCU/OMU infrastructure improvements proposed to be made under the Office of Equal Opportunity Programs capital investment funding. The ways in which the HBCU/OMU contributions are integral to the mission and are based on the demonstrated expertise and experience of the HBCU's/OMU's involved should be discussed. The items being proposed under the Office of Equal Opportunity Programs capital investment funding should be described, and the rationale for including them as capital investments (rather than ordinary mission expenses) should be given. Capital investments may include such items as laboratory or computer upgrades, technicians, or research assistants (including students), but may not be used for normally expected mission expenses such as investigator salaries or mission critical hardware. The contributions that these capital investments will make towards improving the HBCU's/OMU's ability to carry out their roles in the proposed mission, and the contributions that they will make towards improving the HBCU's/OMU's long-term capabilities in space science should be discussed.

The institutions eligible to be considered as HBCU's/OMU's for the purposes described in this section and in Section 4.2 are Historically Black Colleges and Universities and minority educational institutions (including Hispanic Serving Institutions) as defined in 52.219-8 and in 52.226-2 of the FAR. Also eligible are tribal colleges or universities as cited in section 532 of the Equity in Educational Land-Grant Status Act of 1994 (7 U.S.C. 301 note), any other institution that qualifies for funding under the Tribally Controlled Community College Assistance Act of 1978, (25 U.S.C. 1801 et seq.), or Navajo Community College, authorized in the Navajo Community College Assistance Act of 1978, Public Law 95-471, title II (25 U.S.C. 640a note).

G. MISSION IMPLEMENTATION

This section should provide a brief overview of the mission, including mission design, instrument accommodation, spacecraft, launch vehicle required, ground systems, and communication approach. Specific information should be included that describes the unique requirements placed on these mission elements by the science investigation. Tables with mass, power, data, and communications resources and margins would be helpful in understanding the degree of maturity of the proposed approach. Potential risk areas to the proposed investigation and plans for mitigating those risks should be discussed.

Investigations that depend on new technology will not be penalized for risk if adequate plans are described to ensure success of the investigation.

It is recognized that teaming arrangements to implement the investigation may not be complete at the time of the proposal. Proposers will not be penalized for this if it is demonstrated that there are candidate implementation approaches for the spacecraft, launch vehicle, communications, and ground systems that will allow the successful implementation of the investigation.

H. MANAGEMENT AND SCHEDULE

This section should briefly summarize the investigator's proposed management approach. The management organization and decision-making process should be described and the teaming arrangement (as known) should be discussed. The responsibilities of team members, including contributors, and institutional commitments should be discussed. Unique capabilities that each team member organization brings to the team, as well as previous experience with similar systems and equipment, should be addressed. The specific roles and responsibilities of the Principal Investigator and Project Manager should be discussed. Key project personnel (e.g., the Project Manager) need not be identified by name at this time.

A project schedule to meet the proposed launch date and covering all phases of the investigation should be provided. The schedule should include proposed major project review dates; instrument development; spacecraft development; instrument to spacecraft integration and test; launch vehicle integration; and mission operations and data analysis.

I. COST AND COST ESTIMATING METHODOLOGY

This section shall include a estimated cost of the investigation that encompasses all proposed activities, including all applicable mission phases, launch services, development of the ground data system, fee, and contributions. These costs shall be consistent with the program requirements described in Section 3, 4, and 5 of the Announcement of Opportunity. The amount to be costed in each fiscal year should be identified by providing the data in Table B1 for University-class Explorer Missions and Table B2 for Missions of Opportunity, which will not be counted against the page limit. The top portion of Table B1 and B2 requests cost data relative to the NASA Cost. The lower portion addresses contributions. Table B3 gives the NASA inflation index to be used to calculate real year dollars.

The methodology used to estimate the cost, for example, specific cost model, past performance, cost estimating relationships from analogous

missions, should be discussed. Budget reserve strategy should be discussed.

J. APPENDICES

The following additional information is required to be supplied with the proposal as Appendices and, as such, will not be counted within the specified page limit. NO OTHER APPENDICES ARE PERMITTED.

1. Statement of Work (SOW) and Funding Information: For investigations managed from non-Government institutions, provide a SOW. For investigations managed from Government institutions, provide a SOW as if the institution were non-Government. This SOW must include the requirement for a concept study report which is described in the Guidelines for Concept Study Report document available through the Explorer Program Library. The SOW must include general tasks statements for Phases B/C/D, and for Phase E for University-class Explorer Investigations and Missions of Opportunity. All SOW's should include the following as a minimum: Scope of Work, Deliverables (including science data), and Government Responsibilities (as applicable). SOW's need not be more than a few pages in length. Funding information and documentation must be provided which identifies how funds are to be allocated among the organizations supporting the investigation. Funding documents should be provided which are necessary to allocate the correct amount of funds to each organization supporting the investigation.
2. Letters of Endorsement. Letters of endorsement must be provided from all organizations offering goods and/or services on a no exchange of funds basis, non-U.S. organizations providing hardware or software to the investigation, Historically Black Colleges and Universities and Other Minority Universities for which Capital Investment Funding is proposed, and the Launch Service provider if the launch service is not provided through a NASA contract. Letters of endorsement should be signed by institutional and Government officials authorized to commit their organizations to participation in the proposed investigation.
3. Resumes. Provide resumes or curriculum vitae for all science team members identified in the science section. Resumes or curriculum vitae should be no longer than one page in length.

The following information may be provided.

1. References List: Proposals may provide, as an appendix, a list of reference documents and materials used in the proposal. The documents and materials themselves cannot be submitted, except as a part of the proposal.

TABLE B1
TOTAL MISSION COST FUNDING PROFILE TEMPLATE
FOR UNIVERSITY-CLASS EXPLORERS
(FY costs* in Real Year Dollars, Totals in Real Year and 1997 Dollars)

Item	FY1	FY2	FY3	FY4	FY5	...	FYn	Total (Real Yr.)	Total (FY 1997)
Concept Study									
Ground Data System Dev									
Instrument A									
Instrument B									
Spacecraft									
MSI&T **									
Launch services									
MO&DA***									
Other (specify)									
NASA Cost	\$	\$	\$	\$	\$	\$	\$	\$	\$
Goods and/or Services offered on a no exchange of funds basis to:									
Ground Data System Dev									
Instrument A									
Instrument B									
Spacecraft									
MSI&T**									
Launch services									
MO&DA									
Other									
Goods and/or Services offered on a no exchange of funds basis (Total)	\$	\$	\$	\$	\$	\$	\$	\$	\$
Total Mission Cost									\$

Item	FY1	FY2	FY3	FY4	FY5	...	FYn	Total (Real Yr.)	Total (FY 1997)
Capital Investment Funding									

* Costs should include all costs including any fee

** MSI&T - Mission System Integration and Test and preparation for operations

*** Mission Operations and Data Analysis

TABLE B2

**TOTAL INVESTIGATION COST FUNDING PROFILE TEMPLATE
FOR MISSIONS OF OPPORTUNITY**

(FY costs* in Real Year Dollars, Totals in Real Year and 1997 Dollars)

Item	FY1	FY2	FY3	FY4	FY5	...	FYn	Total (Real Yr.)	Total (FY 1997)
Concept Study									
Ground Data System Development									
- Instrument A									
- Instrument B									
MO&DA**									
Other (specify)									
NASA Cost	\$	\$	\$	\$	\$	\$	\$	\$	\$

* Costs should include all costs including any fee

** Mission Operations and Data Analysis

TABLE B3

NASA NEW START INFLATION INDEX

Fiscal Year	1997	1998	1999	2000	2001	2002	2003	2004	2005
Inflation Rate	0.0%	3.3%	3.8%	4.1%	3.9%	3.9%	3.9%	3.9%	3.9%
Cumulative Inflation Index	1.0	1.033	1.072	1.116	1.160	1.205	1.252	1.301	1.352

Use an inflation rate of 3.9% for years beyond 2005.

**University-class Explorer and Missions of Opportunity
Investigation Summary Form**

AO 97-OSS-XX	UNEX Program and Missions of Opportunity
--------------	--

Principal Investigator			
<i>Title</i>	<i>First Name</i>	<i>Middle Name</i>	<i>Last Name</i>
Department			
Company/Institution			
Street Address		City/Town	
State	Zip/Postal	Country	
Telephone	Fax	E-Mail Address	

Proposal Title
Science Theme Supported (1 = primary; 2 = secondary) <input type="checkbox"/> Structure and Evolution of the Universe <input type="checkbox"/> The Sun-Earth Connection <input type="checkbox"/> Astronomical Search for Origins and Planetary Systems <input type="checkbox"/> Solar System Exploration

Abstract (Limit 150 words) <div style="height: 200px; border: 1px solid black; margin-top: 5px;"></div>

**University-class Explorer and Missions of Opportunity
Investigation Summary Form (Page 2)**

Principal Investigator			
<i>Title</i>	<i>First Name</i>	<i>Middle Name</i>	<i>Last Name</i>
Proposal Title			

Mission Mode (Check one)	Cost
<input type="checkbox"/> UNEX	NASA Cost \$_____ Total Mission Cost \$_____
<input type="checkbox"/> Mission of Opportunity	NASA Cost \$_____

Anticipated Launch Vehicle:

Co-Investigator(s)		
Name	Institution	E-mail

APPENDIX C

REGULATIONS GOVERNING PROCUREMENT OF FOREIGN GOODS OR SERVICES

The following Federal Acquisition Regulation (FAR) clauses cover the purchase of foreign goods and services and may be included in contracts resulting from this Announcement of Opportunity:

- 52.225-3 Buy American Act -- Supplies (January 1994)
- 52.225-7 Balance of Payments Program (April 1984)
- 52.225-9 Buy American Act -- Trade Agreements -- Balance of Payments Program (January 1994)
- 52.225-10 Duty-Free Entry (April 1984)
- 52.225-11 Restrictions on Certain Foreign Purchases (May 1992)
- 52.225-17 Buy American Act -- Supplies Under European Community Agreement (May 1995)
- 52.225-18 European Community Sanction for End Products (May 1995)
- 52.225-19 European Community Sanction for Services (May 1995)
- 52.225-21 Buy American Act -- North American Free Trade Agreement Implementation Act -- Balance of Payments Program (January 1994)

The proposer is directed to the Federal Acquisition Regulation and the NASA FAR Supplement for further information on these regulations.

APPENDIX D

CONTENTS OF THE EXPLORER PROGRAM LIBRARY

The Explorer Program Library includes documents available electronically via the Internet, as well as paper copy. Proposers are requested to access the document electronically where possible. Only limited paper copies of documents are available. Please note that not all documents are available via the Explorer Program Library, but access information is provided.

It is incumbent upon the proposer to ensure that the documents used in proposal preparation are of the date and revision listed in the Announcement of Opportunity or this Appendix.

The Explorer Program Library is accessible on the World Wide Web at the URL address

<<http://explorer.larc.nasa.gov/explorer/epl.html>>

Requests for paper copies should be submitted in writing to:

Explorer Program Library
Mail Stop 160
Langley Research Center
National Aeronautics and Space Administration
Hampton, VA 23681-0001
FAX: (757) 864-8894
E-mail: c.l.daniels@larc.nasa.gov

Space Science for the 21st Century: The Space Science Enterprise Strategic Plan (August 1995)

This document is a concise statement of the goals and outlook of NASA's Space Science Enterprise. It is a compilation of the major ideas described in more detail in the context of the overall NASA Strategic Plan

The Space Science Enterprise Strategic Plan (DRAFT)

This document is a draft of an update to the Space Science Enterprise Strategic Plan. The final document is expected to be available in November 1997.

Space Science for the 21st Century: Strategic Plan for 1995-2000 (September 1994)

This document details plans for future missions during the period 1995-2000.

Space Science Roadmaps

The four science themes of the NASA Office of Space Science, through the Space Science Advisory Committee and its subcommittees, have developed Roadmaps. These planning documents prioritize the space science goals for NASA for the years 2000-2020

Sun-Earth Connection Roadmap, Strategic Planning for the Years 2000 - 2020 (April 1997)

The Evolving Universe, Structure and Evolution of the Universe Roadmap 2000 - 2020 (April 1997)

Mission to the Solar System Roadmap 2000 - 2015 (September 1996)

Search for Origins Roadmap (April 1997)

A paper copy may be obtained by sending an E-mail with name and address to <hthronson@hq.nasa.gov>

A Science Strategy for Space Physics (1995)

National Research Council report. A paper copy may be obtained by sending an E-mail with name and address to <cchamber@nas.edu>.

HST and Beyond. Exploration and Search for Origins: A Vision for Ultraviolet - Optical - Infrared Space Astronomy (May 1996)

Report of the "HST and Beyond Committee"

Exploration of Neighboring Planetary Systems (ExNPS) Study (August 1996)

Jet Propulsion Laboratory report. Mission and technology road map; presentation to the Townes Blue Ribbon Panel

Recommended Priorities for NASA's Gamma-Ray Astronomy Program 1996-2010 (1997)

Report synopsis of the Gamma Ray Astronomy Program Working Group

15-Year Plan for X-Ray Astronomy 1994 - 2008 (June 1994)

Report of the X-Ray Astronomy Program Working Group. A paper copy may be obtained by sending an E-mail with name and address to <lkaluziowski@hq.nasa.gov>.

OSS Integrated Technology Strategy (April 1994)

Describes efforts to manage technology infusion into future OSS missions and to promote technology transfer to the private sector

Partners in Education: A Strategy for Integrating Education and Public Outreach into NASA's Space Science Programs (March 1995)

This document describes the overall strategy for integrating education and public outreach into NASA's space science programs.

Implementing the Office of Space Science (OSS) Education/Public Outreach Strategy (October 1996)

This document describes OSS's overall approach to implementing its Education/Public Outreach strategy.

NHB 7120.5 -- Management of Major System Programs and Projects

(November 1993)

This NASA Handbook provides a reference for typical activities, milestones, and products in the development and execution of NASA missions.

Assessment of Recent Changes in the Explorer Program (December 1996)

Report by the Space Studies Board of the National Research Council. A paper copy may be obtained from:

Space Studies Board
2101 Constitution Avenue, NW
National Research Council
Washington, DC 20418

University-class Explorer Ground Data Systems and Mission Operations and Data Analysis

Describes the functions and costs of Ground Data Systems and Mission Operations and Data Analysis.

University-class Explorer Safety, Reliability, & Quality Assurance Requirements

Describes the responsibilities of the PI with regard to Safety, Reliability, and Quality Assurance.

University-class Explorer Guidelines for Concept Study Preparation

Describes the requirements for preparation of the concept study report.

University-class Explorer Space Shuttle Launch Opportunities

Describes the constraints and costs of launching a payload on the Space Shuttle.

University-class Explorer Long Duration Balloon Opportunities

Describes the constraints and cost of proposing a long duration balloon mission.

University-class Explorer Secondary Mission on an Expendable Launch Vehicle Opportunities

Provides information on opportunities to propose a secondary mission on an Expendable Launch Vehicle.

ISO 9000 Series

The following ISO 9000 quality documents describe current national and NASA standards of quality processes and procedures.

American National Standard, "Quality Systems - Model for Quality Assurance in Design, Development, Production, Installation, and Servicing," ANSI/ASQC Q9001-1994.

"Quality Management and Quality System Elements - Guidelines," ANSI/ASQC Q9004-1-1994.

"Quality Management and Quality Assurance Standards - Guidelines for Selection and Use," ANSI/ASQC Q9000-1-1994

"ISO 9000 and NASA," Code Q presentation, April 24, 1995.

Note: The first three ISO 9000-related documents are copyrighted and cannot be reproduced without appropriate compensation. For copies contact:

American Society for Quality Control (ASQC)
P.O. Box 3066
Milwaukee, WI 53201-3066
800-248-1946

Example Mission Definition and Requirements Agreement

Example of such an agreement

MIDEX Lessons-Learned Workshop Report (August 1996)

Proceedings from the Medium-class Explorer (MIDEX) Lessons-Learned Workshop held in June 1996.

NAS/NAC Report: A New Science Strategy for Space Decades Astronomy and Astrophysics (1997)

Report of the Task Group on Astronomy and Astrophysics. A study undertaken by the Space Science Board to determine the principal scientific issues that the discipline of space science would face during the period 1995-2015

NAS/NRC Report: Opportunities in Cosmic-Ray Physics and Astrophysics
(1995)

Report of the Committee on Cosmic-ray Physics. A review was undertaken by the Board on Physics and Astronomy to review the field that addresses both experimental and theoretical aspects of the origin of cosmic radiation from outside the heliosphere.

NAS/NRC Report: Cosmology, A Research Briefing (1995)

Report of the Panel on Cosmology. A research briefing by the Board on Physics and Astronomy to reassess the opportunities for scientific advances in cosmology

Electronic versions only are available for the following:

Federal Acquisition Regulations (FAR) General Services Administration

(URL: <http://www.gsa.gov/far/>)

NASA FAR Supplement Regulations

(URL: <http://www.hq.nasa.gov/office/procurement/regs/nfstoc.htm>)

NASA Financial Management Manual

(URL: <http://www.hq.nasa.gov/fmm/>)

APPENDIX E

CERTIFICATIONS

**CERTIFICATION REGARDING
DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS
PRIMARY COVERED TRANSACTIONS**

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 14 CFR Part 1265.

- A. The applicant certifies that it and its principals:
- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
 - (b) Have not within a three-year period preceding this application been convicted or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or Local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or Local) with commission of any of the offenses enumerated in paragraph A.(b) of this certification;
 - (d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or Local) terminated for cause or default; and
- B. Where the applicant is unable to certify to any of the statements in this certification, he or she shall attach an explanation to this application.
- C. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion - Lowered Tier Covered Transactions (Subgrants or Subcontracts)
- (a) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principles is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department of agency.
 - (b) Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

Organization Name

AO or NRA Number and Title

Printed Name and Title of Authorized Representative

Signature

Date

Printed Principal Investigator Name

Proposal Title

APPENDIX F

SERVICES AVAILABLE FROM THE GODDARD SPACE FLIGHT CENTER

In keeping with its mission, the Goddard Space Flight Center will provide access to the Center's institutional capabilities, including facilities, equipment, and expertise in science, engineering, technology, and project management to support and enhance the abilities of the scientific and supporting technical communities to conduct scientific investigations. Upon request, GSFC is prepared to assist Principal Investigators (PI's) selected under this Announcement of Opportunity in any or all aspects of mission development, from systems engineering and mission management through on-orbit satellite operation. In this role, Goddard will work with the Principal Investigator to plan and coordinate agreed upon services both within the Center and with external partners to draw on the best capabilities of each to develop the missions at low cost.

GSFC services are available on a full cost basis. Mr. Orlando Figueroa, Head of the GSFC System Technology and Advanced Concepts Directorate, will serve as the single point-of-contact to coordinate any or all aspects of the Center's capabilities requested under this Announcement of Opportunity including cost estimates during proposal preparation. The possible GSFC services are:

- Mission management, including the planning and execution of all phases of the mission;
- Instrument and spacecraft systems engineering and technologies;
- Mission operations and data systems engineering and technologies.
(Refer to the Ground Data Systems and Mission Operations and Data Analysis document in the Explorer Program Library for additional information and point of contact);
- Discipline engineering, including design, analysis, and implementation in areas such as structural/mechanical, thermal, attitude control and determination, command and data handling, communications, and optics;
- Reliability and quality assurance, including parts, materials, analysis, safety, review, and inspection;
- Spacecraft development, including the specification, acquisition or build, and qualification of spacecraft or spacecraft components;
- Test facilities including vibroacoustic, electromagnetic, thermal/vacuum, magnetics, class 10,000 or better integration and test facilities; and

- Launch services, including expendable launch vehicles and the space shuttle.

Access information for Mr. Figueroa is:

Mr. Orlando Figueroa
System Technology and Advanced Concepts Directorate
Goddard Space Flight Center
National Aeronautics and Space Administration
Greenbelt, MD 20771
E-mail: orlando.figueroa@gsfc.nasa.gov